

SHORT PAPER

Model Development of Android-Based Learning in Vocational High School

Elida¹, Dony
Novaliendry¹(✉), Noper
Ardi², Erni Marlina Binti
Saari³, Nurindah Dwiyan⁴

¹Universitas Negeri Padang,
Padang, Indonesia

²Politeknik Negeri Batam,
Batam, Indonesia

³Universiti Pendidikan
Sultan Idris, Tanjong
Malim, Malaysia

⁴Sekolah Tinggi Ilmu
Pelayaran, Jakarta, Indonesia

[dony.novaliendry@
ft.unp.ac.id](mailto:dony.novaliendry@ft.unp.ac.id)

ABSTRACT

This study aimed to develop an Android-based learning model for subjects of Creative Products and Entrepreneurship for catering students at Vocational Schools. The study analyzed the validity of Android-based learning models and analyzed practicality and the effectiveness of Android-based learning models for Creative Product and Entrepreneurship subjects for catering students at SMK Negeri 9 Padang. Based on the validity assessment of material experts, media experts, linguists, and practitioners, the average score of material aspects is 4.78 (Very Eligible), the media aspect is 4.22 (Very Eligible), and the language aspect is 4.23 (Very decent). The results of practicality tests for teachers and students, as well as the effectiveness test of the use of Android-based learning media on students of Creative Product and Entrepreneurship subjects conducted using a questionnaire, obtained a practicality value of 4.55 (feasible) and effectiveness of 4.62 (feasible).

KEYWORDS

learning model, based on Android, product subjects creative and entrepreneurship

1 INTRODUCTION

Creative and entrepreneurial products is one of the subjects of vocational specializations in vocational expertise in SMK. This subject provides knowledge, skills, and attitudes-based learning. Android is an application of *E-learning*. The design of the development of a learning model is *E-learning* based on constructivism learning theory, namely how students can build their knowledge through the learning experiences they get in the learning process. Tasker [1][2] put forward three emphases in constructivism learning theory as follows. First is the active role of students in meaningfully constructing knowledge. Second is the importance of making connections between ideas in meaningful construction. The third is to link ideas with new information received.

Development of learning models: *e-Learning* is a term that refers to an activity, usually, education or training that uses several types of devices mobile [3][4].

Elida, Novaliendry, D., Ardi, N., Binti Saari, E.M., Dwiyan, N. (2023). Model Development of Android-Based Learning in Vocational High School. *International Journal of Interactive Mobile Technologies (IJIM)*, 17(22), pp. 152–159. <https://doi.org/10.3991/ijim.v17i22.45403>

Article submitted 2023-08-29. Revision uploaded 2023-10-02. Final acceptance 2023-10-10.

© 2023 by the authors of this article. Published under CC-BY.

It is an effort of utilizing technology from mobile devices that has exceeded its primary function, namely, to communicate. Besides, this mobile device has also received support in terms of connectivity. E-learning is a type of teaching and learning that allows the delivery of teaching materials to students using the Internet, Intranet, or network media computer [5][6].

E-learning is a unique learning because learners can access learning materials, directions, and applications related to learning, whenever and wherever. It can increase attention to learning material, make learning pervasive, and can encourage learner motivation for lifelong learning. Besides, compared to conventional learning, e-learning allows more opportunities for learners to interact informally with each other so that this model can improve the quality of learning of Creative and Entrepreneurship Products that can improve students' field expertise and also 21st-century competencies needed for the future [7][8][9].

Based on observations made at SMK N 9 Padang, most students make use of mobile phones primarily as telephone, for SMS (Short Message Service), playing songs/videos, accessing social networks (Facebook, Twitter, BBM), and even entertainment such as games. According to research conducted by Yuniati [10][11], mobile learning is able to make mobile phones that were initially only used for SMS, telephone, internet into a complete learning tool that contains subject matter consisting of questions and materials and is equipped with various features such as search, jump to and back. The subject of creative products and entrepreneurship is one of the adaptive subjects studied in Vocational High School (SMK). Creative products and entrepreneurship aims to help students achieve entrepreneurship competencies by learning about the characteristics of entrepreneurs, namely discipline, high commitment, honesty, creativity, innovation, independence, and long working hours. Achieving competency requires learning resources that are genuinely appropriate and relevant so that it can bring students to more realistic situations, meaning that, in the learning process, students understand through simple examples, so that they can imbibe those qualities. Android-based learning media enables this through programs (software) that are simple and of high quality and can be easily understood by students.

Based on interviews that have been conducted by researchers with teachers of Creative and Entrepreneurship Product subjects, it is known that learning requires attractive learning media for students that can be used at anytime and anywhere. One of the new learning media is Android. According to the teacher who teaches Creative Products and Entrepreneurship subjects, Android is one of the new learning media for students because in the Padang N 9 Vocational School, Android learning apps have never been developed before for the subjects taught in the course. Providing Android-based learning is also expected to help overcome the limited number of hours for the course. For practical activities, students can also increase learning hours independently with Android outside the learning hours. In line with this, learning Creative Products and Entrepreneurship at SMK N 9 Padang consists of 5 materials that must be studied, namely, production costs, production marketing, simple financial reports, promotional media for marketing, and online marketing. Based on the results of observations of class XII students at SMK N 9 Padang, it was found that they have difficulty in finding materials and examples for each topic, especially promotional media for marketing and online marketing.

Based on some of the problems outlined above, the researchers conducted a development study entitled "Development of e-Learning Learning Model an Android Based Subjects of Creative and Entrepreneurship Products in Class XII SMK N 9 Padang". The existence of this research is expected to produce a valid, effective, and practical Android-based e-learning model and products in the form of Android

applications in Creative Products and Entrepreneurship Subjects for Vocational High School (SMK) students.

2 METHOD

Based on the background and formulation of the problem in this study, the type of research conducted was *development research*. The development model used was a 4D model consisting of 4 stages namely, the discovery (*define*) or analysis of needs, design development, development (*develop*), and evaluate (*evaluate*) [12][13][14][15].

Product development-based learning model Android subjects Creative Products and Entrepreneurship was a learning material that has been developed by taking into account aspects of learning and media as a principle of learning message design. The product development research conducted was directed to produce a product in the form of Android-based learning for culinary students at SMK Negeri 9 Padang, which is used to improve the learning process and student competence. Therefore this research process was carried out and begins with (1) a preliminary study, (2) then designing an Android-based learning media, (3) conducting product validation, and (4) revising and refining based on validation data analysis from material experts, experts learning design and software engineering experts, followed by individual trials, small group trials, and field trials to produce learning media that are appropriate for use in accordance with the characteristics of the subjects and students as users [16][17].

Aspects were revised and refined based on data analysis and trials and input from material experts, learning design experts, software engineering experts and students as users of this interactive learning media to explore some aspects that are prevalent in the process of developing a product. Learning media variables have a very appropriate average value. The learning media variables assessed included content eligibility, presentation, linguistic, and graphic [18][19][20].

The benefits of using Android-based learning media for Creative Product and Entrepreneurship subjects are as follows: (1) the material is easy to understand because the concepts presented are systematic and planned to make it easier for students, (2) learning faster and more attractive so it does not cause boredom because it can be used repeatedly, (3) Android-based learning media can also be used as an alternative learning media individually.

3 RESULTS AND DISCUSSION

Validity assessment by material experts on the development of android-based learning media was carried out by several people including material expert lecturers from the Department of Electronic Education, FT UNP, media experts from the Department of Information Education, linguists from the Indonesian Language Department FBS and practitioners from teaching teachers Creative Product and Entrepreneurship subjects at SMK N 9 Padang. The validation assessment is presented in Table 1.

In Table 1, regarding the results of the assessment of material aspects, the average score of material aspects in the media *E-learning* Android-based is 4.78. If converted into qualitative data based on a five scale assessment category, the material aspects of the media *E-learning* Android-based are categorized as "Very Eligible".

In Table 2, regarding the results of media aspect assessment, the average score of the media aspects in the media *E-learning* Android-based is 4.22. If converted into

qualitative data based on a five scale assessment category, the material aspects of the media e-Learning Android- based are categorized as “Very Eligible.”

In Tables 3 and 4, the results of the development test above show that the average value of material aspects is 4.78 (Very feasible), the media aspect is 4.22 (Very feasible), and the language aspect is 4.23 (Very feasible). There are no criticisms or suggestions given by students towards learning media based on Android so that the media learning Android-based deserves to be tested on validation test by students.

Table 1. Aiken’s V learning media video tutorial gastronomy course by expert material

No.	Criteria	Scores	
		Expert Validation Material	Practitioner Validation (Teacher)
1.	Suitability of material with objectives	5	5
2.	Depth of material	4	4
3.	Systematic, coherent, logic flow clear	4.5	5
4.	Clarity of question formulation	5	4
5.	Completeness of questions	5	5
6.	The truth of the concept of questions	5	4
7.	Consistency of evaluation with learning objectives	5	5
8.	Communicative language	5	5
9.	Accuracy in using the terms	5	5
10.	Provision of learning motivation	5	5
Average score		4.85	4.7
Average score material aspects		4.78	

Table 2. Aiken V Android based video learning media by media expert learning

No.	Criteria	Scores	
		Validation Expert Media	Practitioner Validation (Teacher)
1.	Effective and efficient use of resources	4	4
2.	Media reliability	4	4.6
3.	Media compatibility	4	4
4.	Use of media	4.3	4
5.	Communicative	5	3.5
6.	Creative	4.5	5
7.	Visual	4	4.5
8.	Animation	4	5
9.	Navigation icons	3.5	4
Average score		4.14	4.29
Average media aspect score		4.22	

Table 3. Results of language aspect assessment

No.	Criteria	Score	
		Validation Language	Validation Practitioner (Master)
1.	Simplicity language	4.3	4
2.	Compliance language with students' cognitive level	4.5	4.5
3.	The use of language communicative	5	4
4.	Accuracy terms financial within	4	4
5.	Compliance with the EYD language	4	4
Average score		4.36	4.1
The average score of the language		4.23	

Table 4. Development test results

No.	Aspect of	Average Value	Criteria
1.	Material	4.78	Very feasible
2.	Media	4.22	Very feasible
3.	Language	4.23	Very feasible

Table 5. Test results practicality

No.	Criteria	Scores	
		Validation Teacher	Validation Student
1.	Android-based learning media easy to use	4.5	4.2
2.	Accessing android-based learning media is easier to do	4.3	5
3.	The use of android-based learning media raises student motivation	4.7	4.6
4.	Learning using Android-based learning media makes students quick to understand the material	4.5	4.6
5.	Android-based learning media can be used quickly	4.7	4.5
6.	The composition of colors, writing, and background that is used is interesting	4.8	4.1
7.	The use of android-based learning media can save students time in understanding material	4.7	4.6
8.	The use of android-based learning media can make the learning process more interesting	4.9	4.5
9.	Android-based learning media are designed following learning materials	4.3	4.2
10.	Android-based learning media can be used independently by students	4.8	4.6
Average score		4.62	4.49
Average Test score practicality		4.55	

Table 6. Effectiveness test results

No.	Criteria	Score
		Validation Student
1.	I love learning to use android based learning media	4.5
2.	Learning to use interactive multimedia makes me more motivated in learning	4.3
3.	Exciting display on this android-based learning media	4.7
4.	Learning media-based this android is creative in explaining the learning of creativity and entrepreneurship products	4.5
5.	I can use Android-based learning media properly because it has a clear usage flow	4.7
6.	I can learn independently using this Android-based learning media	4.8
7.	This Android-based learning is easy to use	4.7
8.	The language used is simple and clear, so it is easy to understand	4.9
9.	This Android-based learning media makes the learning process more varied	4.3
10.	I do not feel bored when using android-based learning media in learning	4.8
Average score of		4.62

The results of the test show that the average value of the aspect is practicality. 4.55 (Very feasible). When converted into qualitative data based on a five-scale rating category, the media aspect of the media *E-learning* Android-based is categorized as “Very Eligible” (Table 5).

In Table 6, the results of the test show that the average value of aspects is practical 4.62 (Very feasible). If converted into qualitative data based on a five-scale assessment category, the aspect of media in the media *-e-Learning* Android Based Is categorized as “Very Eligible.”

4 CONCLUSIONS

Based on the results of research and discussion, the following conclusions can be drawn:

Android-based Learning Media Products developed for students of the SMK Vocational High School expertise program are eligible and suitable for use based on the validation by the material experts covering the appropriateness of contents with Aiken’s V value of 4.78 on Valid criteria, the feasibility of the media with Aiken’s V% value of 4.22 on the Valid criteria, the language aspect with the value of Aiken’s V of 4.23 on the Valid criteria and very feasible.

The practicality of using Android-based learning media on students viewed from teacher testing gets a practical value of 4.62% and from students, 4.49. It means that it is efficient to use an Android-based Learning Media in terms of the effectiveness assessed by students in the Creative Products and Entrepreneurship subjects in the SMK Culinary Skills Program. The criterion effectiveness with a percentage of 4.62% means it is adequate to use.

5 ACKNOWLEDGMENTS

We want to express our gratitude to the Ministry of Research, Technology, and Higher Education, who has provided funding for research development models learning on Android-based. We would also like to thank the UNP Chancellor, the Head of the UNP Research Center (LP2M), the Dean of FPP, the Head of the 9th SMK Negeri Padang, and their staff and staff as partners, who have provided support and opportunities to conduct this research.

Thank you to Rahmad Fadillah for helping to create an Android application program for learning media on the subjects of entrepreneurs and creative products.

6 REFERENCES

- [1] APJII (Asosiasi Penyelenggara Jasa Internet Indonesia) & Polling Indonesia. 2016. Survey Penetrasi dan Perilaku Pengguna Internet Indonesia. www.apjii.or.id
- [2] E. Efendi and H. Zhuang, E-Learning Konsep dan Aplikasi. Yogyakarta: ANDI, 2005.
- [3] Elmita Darlis. 2019/2020. Perangkat Pembelajaran Produk Kreatif dan Kewirausahaan Kelas XII Tata Boga. Padang: Sekolah Menengah Kejuruan Negeri 9 Padang Dinas Provinsi Sumatera Padang.
- [4] Hamim, Tohari. Analisis Serta Perancangan Sistem Informasi Melalui Pendekatan UML. Yogyakarta: Andi Offset, 2014.
- [5] Mohammad Sobhan. Analisa Perancangan Sistem. Jakarta: Lentera Ilmu Cendekia, 2012.
- [6] Nazruddin Safaat. Aplikasi Berbasis Android. Bandung: Informatika Bandung, 2015.
- [7] Priyadi, Yudi. Kolaborasi SQL & ERD Dalam Implementasi Database. Yogyakarta: Andi, 2014.
- [8] Rusman. Model-model Pembeajaran Mengembangkan Profesionalitas Guru. Depok: Rajawali Pers, 2012.
- [9] R. Sanjaya and M. Leong, Mudah Membangun Web E-Learning. Yogyakarta: Universitas Atma Jaya, 2008.
- [10] Schwaber, Ken and Sutherland, Jeff. The Scrum Guide. Scrum.org. 2013.
- [11] Suartama, I Kadek and Dewa Kade, E- Learning Berbasis Moodle. Yogyakarta: Graha Ilmu, 2014.
- [12] Sugiyono. Metode Penelitian Pendidikan. Bandung: Alfabeta, 2015.
- [13] Suharsimi Arikunto. Prosedur Penelitian: Suatu Pendekatan Praktik (Edisi Revisi 2010). Jakarta: Rineka Cipta, 2010.
- [14] Sukiman. Pengembangan Media Pembelajaran. Yogyakarta: Pustaka Insan Madani, 2012.
- [15] Thiagarajan, Sivasailam, Dorothy S. Semmel, and Melvyn I Semmel. (1974).
- [16] Instructional Development for Training Theacher of exceptional Children. Minnesota: Indiana University.
- [17] Tribowo, Suryanto. Buku Panduan Penggunaan Modular Object- Oriente Learning Environment (Moodle), 2014. <http://elearning.unukaltim.ac.id>
- [18] Widhiartha, Putu A. Memahami Lebih Lanjut Tentang e-Learning. [Online] Available http://www.ilmukomputer.org/wpcontent/uploads/2008/07/widhiartha_elearning.pdf. 25 Mei 2018.
- [19] Moodle Docs. [Online] <http://docs.moodle.org/>. 25 Mei 2018
- [20] Ahyanuardi, U. Verawardina, D. Novaliendry, L. Deswati, and R. A. Bahtiar, "An analysis on the needs assessment of online learning program in faculty of engineering, Universitas Negeri Padang," *Pegem Journal of Education and Instruction*, vol. 13, no. 1, pp. 13–19, 2022. <https://doi.org/10.47750/pegegog.13.01.02>

7 AUTHORS

Elida, Universitas Negeri Padang, Padang, Indonesia (E-mail: 11111961@fpp.unp.ac.id).

Dony Novaliendry, Universitas Negeri Padang, Padang, Indonesia (E-mail: dony.novaliendry@ft.unp.ac.id).

Noper Ardi, Politeknik Negeri Batam, Batam, Indonesia (E-mail: Noperardi@polibatam.ac.id).

Erni Marlina Binti Saari, Universiti Pendidikan Sultan Idris, Malaysia (E-mail: marlina@meta.upsi.edu.my).

Nurindah Dwiyani, Sekolah Tinggi Ilmu Pelayaran, Jakarta, Indonesia (E-mail: nurindah05kammar@gmail.com).